

WHAT IS CLAIMED IS:

1. An electronic equipment mounting angle varying apparatus comprising:

a base member mounted at a place where electronic equipment is installed;

a mounting member on which the electronic equipment is mounted, and which is supported by the base member so as to freely swing about a horizontal base support shaft axis; and

an arm member supported by the mounting member so as to freely swing about a mounting member support shaft axis extending horizontally, which sets mounting angle of the electronic equipment by being latched by the base member, whereby

the electronic equipment is mounted at a prescribed angle.

2. The electronic equipment mounting angle varying apparatus according to claim 1, wherein the base member holds the electronic equipment at a prescribed mounting angle by latching the arm member, and comprises an arm latched portion constituted by a plurality of holes formed along a direction perpendicular to the base support shaft axis; and

the arm member has an arm latching portion comprising a positioning latching portion that is fit into the arm latched portion and determines a position relative to the base member, and an elastic latching portion that has a convex portion at the leading end thereof and is flexibly deformed so that the convex portion is fit inside the arm latched portion and engages therewith, the arm latching portion being latched by the engagement of the convex portion in the arm latched portion.

3. The electronic equipment mounting angle varying apparatus according to claim 2, wherein the base member comprises a latching guide surface portion against which the arm member abuts in a manner such that angle subtended with inner surface of the arm member is acute,

wherein, by pressing the electronic equipment downward, the arm latching portion of the arm member is guided so as to be fitted into and latched by the arm latched portion of the base member, and the arm member is guided to a horizontal attitude.

4. The electronic equipment mounting angle varying apparatus according to claim 2, wherein the arm member comprises an arm guide portion for releasing latching of the arm latching portion, and

the equipment angle varying apparatus further comprises an operating member having an operating guide portion which, by being moved from a normal position to an operating position, causes the arm guide portion of the arm member to move for releasing latching between the arm latching portion and the arm latched portion, the operating member being energized so as to return from the operating position to the normal position by return means.

5. The electronic equipment mounting angle varying apparatus according to claim 1, wherein a shaft bearing structure between the base member and the mounting member comprises a base support shaft portion and a base support shaft bearing portion provided to one or another of the base member and the mounting member, respectively;

the base support shaft portion comprises:

a main shaft portion, centered on the base support shaft axis, having a first cylindrical surface extending along the base support shaft axis; and

a fitting shaft portion, deployed concentrically with the main shaft portion, having a second cylindrical surface one part of which is cut out with a fitting surface, and

the base support shaft bearing portion comprises:

a first shaft bearing portion that has a circular arc shaped cross-section and receives the first cylindrical surface of the main shaft portion slidably; and

fitting shaft bearing portion comprising a second shaft bearing portion which has a circular arc shaped cross-section provided concentrically with the first shaft bearing portion, which receives the second cylindrical surface of the fitting shaft portion slidably, and which supports the base support shaft portion together with the first shaft bearing portion rotatably; and a first attachment hole formed through the second shaft bearing portion, and including a fitting surface into which, from a relative position that cannot be assumed when the angle varying apparatus is in use, the base support shaft portion is fit into the base support shaft bearing portion, along a fitting surface of the fitting shaft portion in the base support shaft portion.

6. The electronic equipment mounting angle varying apparatus according to claim 5, wherein the base support shaft portion is provided with the fitting shaft portion at both ends of the main shaft, respectively, and the base support shaft bearing portion is provided with the fitting shaft bearing portion at both ends of the first shaft bearing portion, respectively.

7. The electronic equipment mounting angle varying apparatus according to claim 5, wherein the first shaft bearing portion in the base support shaft bearing portion has a die extraction space oriented in one of upper and lower die extraction directions outside of the first cylindrical surface;

the fitting shaft bearing portion in the base support shaft bearing portion has a die extraction space, oriented in the other of the directions of upper and lower die extraction, outside of the shaft bearing surface of the second shaft bearing portion; and

the first attachment hole is passed through in line with the upper and lower die extraction directions.

8. The electronic equipment mounting angle varying apparatus according to claim 1, wherein shaft bearing structure between the mounting member and the arm member comprises a mounting support shaft portion and a mounting support shaft bearing portion provided to one or another of the mounting member and the arm member, respectively;

the mounting support shaft portion comprises:

a mounting main shaft portion centered on the mounting member support shaft axis, having a third cylindrical surface extending along the mounting member support shaft axis; and

a mounting fitting shaft portion deployed concentrically with the mounting main shaft portion, having a fourth cylindrical surface one part of which is cut out with a fitting surface; and

the mounting support shaft bearing portion comprises:

a third shaft bearing portion that has a circular arc shaped cross-section and receives the third cylindrical surface of the mounting main shaft portion slidably;

a fourth shaft bearing portion which has a circular arc shaped cross-section provided concentrically with the third shaft bearing portion, which receives the fourth cylindrical surface of the mounting fitting shaft portion slidably, and supports the mounting support shaft portion together with the third shaft bearing portion rotatably; and

a second attachment hole, formed through the fourth shaft bearing portion, having a fitting surface into which, from a relative position that cannot be assumed when the angle varying apparatus is in use, the mounting support shaft portion is fit into the mounting support shaft bearing portion, along a fitting surface of the mounting fitting shaft portion in the mounting support shaft portion.

9. The electronic equipment mounting angle varying apparatus according to claim 8, wherein the mounting support shaft portion is provided with the mounting fitting shaft portion at both ends of the mounting main shaft, respectively; and

the mounting support shaft bearing portion is provided with the mounting fitting shaft bearing portion at both ends of the third shaft bearing portion, respectively.

10. The electronic equipment mounting angle varying apparatus according to claim 8, wherein the third shaft bearing portion in the mounting support shaft bearing portion has a die extraction space, oriented in one of the directions of upper and lower die extraction, outside of the third cylindrical surface; and

the mounting fitting shaft bearing portion in the mounting support shaft bearing has a die extraction space oriented in the other direction of upper and lower die extraction outside of the shaft bearing surface of the fourth shaft bearing portion, and the second attachment hole is formed through in line with the upper and lower die extraction directions.

11. The electronic equipment mounting angle varying apparatus according to claim 1, wherein the base member further comprises a falling-out

prevention portion for preventing the arm member from coming out; and the arm member further comprises an arm pulling-out prevention portion which engages the falling-out prevention portion of the base member.

12. The electronic equipment mounting angle varying apparatus according to claim 1, wherein the electronic equipment comprises, on lower surface thereof, a pair of guide rails having L-shaped cross-sections in which engagement grooves extending to face each other are formed, wherein, and a guide portion protruding toward insides of the guide rails;

the mounting member abuts against the guide portion, and comprises a pair of positioning guide portions that respectively abut against the guide rail, and a pair of attachment portions, projecting to the outside of the sides and having sloped surfaces formed in the lower end edge parts, which are for attaching the angle varying apparatus to the electronic equipment by being fit into the engagement grooves of the guide rails; and

the attachment portions, respectively, are fitted to the guide rails at prescribed positions where the sloping surfaces of the attachment portions oppose the guide rail end edges by the abutment between the pair of positioning guide portions and the abutment between the guide portion and the mounting member.

13. An electronic equipment mounting angle varying apparatus for setting an electronic equipment at a predetermined angle, comprising:

a base unit disposed at a place where the electronic equipment is installed;

a mounting unit on which the electronic equipment is detachably mounted and which includes a horizontal base support shaft and is supported by the base unit so as to swing freely about the base support shaft; and

an arm unit which is supported by the mounting unit so as to swing freely and which is adapted to set an angle for mounting the electronic equipment by latching the base unit relative to the mounting unit,

the base unit including a plurality of arm latched portions which are formed across a direction perpendicular to the base support shaft and hold the electronic equipment at a predetermined mounting angle by being latched by the arm unit, and a falling-out preventing portion which prevents the arm unit from being released;

the arm unit including an arm latching portion which is latched with an elastic force to the arm latched portions of the base unit so as to hold the electronic equipment in a predetermined mounting angle, an arm guide portion which releases latching of the arm latched portions; and an arm pull-out preventing portion which engages the falling-out preventing portion of the base unit, and

the electronic equipment mounting angle varying apparatus further comprising an operating unit including an operating guide portion that is moved from a normal position to an operating position so as to move the arm guide portion of the arm unit and release latching between the arm latching portion and the arm latched portion, and return means that urges the operating guide portion to return from the operating position to the normal position.

14. The electronic equipment mounting angle varying apparatus according to any one of claims 1 and 13, wherein

the base unit includes an equipment support portion of narrower width than an equipment support portion of a standard base unit that is molded using an insert die in a standard die for molding the standard base unit for the mounting angle varying apparatus attached to an electronic equipment with no auxiliary equipment being installed therein, and

at least two of the mounting angle varying apparatuses are attached to the electronic equipment and to the auxiliary equipment when auxiliary equipment is installed in the electronic equipment.

15. The electronic equipment mounting angle varying apparatus according to any one of claims 1 and 13, wherein at least two of the mounting angle varying apparatuses are attached to the electronic equipment and to an auxiliary equipment when the auxiliary equipment is installed in the electronic equipment.

16. The electronic equipment mounting angle varying apparatus according to any one of claims 1 to 15, wherein the mounting unit includes a predetermined number of attachment hubs that are formed in the upper part thereof using an insert die in a standard die for forming the mounting unit, and is attached to the electronic equipment using the attachment hubs.

17. The electronic equipment mounting angle varying apparatus according to any one of claims 1 and 13 wherein

the base unit includes:

an operating unit insertion hole which an operating portion formed in one end of the operating unit passes through and exposes the operating portion to outside;

an operating unit overhead guiding portion which supports and guides another end of the operating unit from overhead; and

a disassembling hole provided so as to face the operating unit at a position between the operating unit insertion hole and the operating unit overhead guiding portion, and



the operating unit comprises a sliding guided portion that is supported and guided by the operating unit overhead guiding portion,

the operating unit being attached to the base unit by being inserted into operating unit insertion hole in the base unit from inside toward outside of the base unit, and brought back from outside to inside of the base unit so that the sliding guided portion is inserted in the operating unit below the operating unit overhead guiding portion of the base unit, and

the operating unit being detached from the base unit by being passed through the disassembling hole from below the base unit and pressed upward, and being pressed from inside toward outside of the base unit in a horizontal direction so that the sliding guided portion is released from below the operating unit overhead guiding portion of the base unit.